

ADDITIONAL NOTES ON THE NATIVE TREES OF THE LOWER WABASH VALLEY.

By ROBERT RIDGWAY.

SINCE the publication of my "Notes on the Native Trees of the Lower Wabash and White River Valleys in Illinois and Indiana,"* and the additions and corrections to the same article,† a considerable amount of further information has been gathered, partly through my own observations during occasional visits to that region, but chiefly through investigations made by Dr. J. Schneck, of Mount Carmel, Ill., who having been appointed by the State authorities to make an exhibit of Illinois woods at the New Orleans Exposition, was enabled to take measurements of many species which, for one reason or another, I had not measured. Dr. Schneck having kindly furnished me with these measurements and given me permission to publish them, they are presented in the following notes, except in those cases where figures already published are not affected.

After the lapse of so many years, it is to be expected that additions are to be made to the list, that some statements are to be modified, and that errors are to be corrected. These will be found under appropriate headings at the end of this paper.

Before proceeding to take up the species in regular order, it may be well to explain that the first number corresponds with the numeration of my first paper, while the number in parentheses prefixed to the name of a species corresponds in each case with that given in the octavo edition of Prof. Sargent's "Catalogue of the Forest Trees of North America," published in 1880,‡ and not with the numeration of the large quarto "Report on the Forests of North America (exclusive of Mexico)," published in 1884.

* Proc. U. S. Nat. Mus., v, 1882, pp. 49-88, (1883). (Actual date of publication of edition of "separates," June 12, 1882.)

† Additions and corrections to the list of native trees of the Lower Wabash Valley. Botanical Gazette, VIII, No. 12, Dec. 1883, pp. 345-352.

‡ SARGENT, CHARLES S.—A Catalogue of the Forest Trees of North America; Tenth Census of the United States, Govt. Printing Office, Washington, 1880.

§ SARGENT, CHARLES S.—Report on the Forests of North America (exclusive of Mexico); Tenth Census of the United States, IX, Govt. Printing Office, Washington, 1884.

Measurements of girth are always taken above the swell at the base of the tree, or at a height usually of 2 to 4 feet, though sometimes 5 or 6 feet from the ground. The height is always measured from a felled tree with a 100-foot tapeline. Unless otherwise stated, all trees measured were found in the immediate vicinity (within 3 miles radius) of Mount Carmel, Ill., though sometimes on the opposite side of the Wabash River, in Knox and Gibson counties, Indiana.

2. (8.) *LIRIODENDRON TULIPIFERA*, Linnaeus. Tulip Tree; "Poplar."

A large poplar cut for shingles 8 miles east of Vincennes measured 8 feet across the top of the stump, which was solid to the center; the last cut was 63 feet from the first, and the trunk made 80,000 shingles.

3. (10.) *ASIMINA TRILOBA* (Linnaeus) Dunal. Pawpaw.

The largest specimen measured by Dr. Schneck was 48 feet high and 27 inches in circumference.

4. (14.) *TILIA AMERICANA*, Linnaeus. American Linden. "Lin."

Dr. Schneck's largest measurements are, girth, $17\frac{1}{2}$ feet; height, 135 feet.

6. (—.) "*ILEX VERTICILLATA*. Black Alder."

This should read "*Ilex decidua*, Walter. Deciduous Holly." *I. verticillata* occurs also, but it is only a shrub.

7. (40.) *ÆSCULUS GLABRA*, Willdenow. Smooth Buckeye.

A tree of this species measured by Dr. Schneck was 83 feet high and 35 inches in circumference.

11. (53.) *NEGUNDO NEGUNDO* (Linnaeus) Karsten. Box Elder.

A tree measured by Dr. Schneck was 60 feet high and $9\frac{1}{2}$ feet in circumference.

13. (—.) *RHUS GLABRA*, Linnaeus. Smooth Sumac.

Dr. Schneck measured a specimen of this species which was 20 feet high and 9 inches in girth.

16. (65.) *GYMNOCLADUS DIOICUS* (Linnaeus) Koch. Coffee-bean; Coffee-nut.

Height, 129 feet; circumference, $7\frac{1}{2}$ feet, are the dimensions of a tree measured by Dr. Schneck.

17. (66.) *GLEDITSIA AQUATICA*, Marshall. Water Locust.

The known size which this tree attains is considerably increased by Dr. Schneck's measurements, which show that a height of 90 feet is sometimes reached, the specimen measured being only $4\frac{3}{4}$ feet in circumference.

18. (67.) *GLEDITSIA TRIACANTHOS*, Linnaeus. Honey Locust.

The largest specimen measured by Dr. Schneck was 156 feet high and 18 feet in circumference.

19. (58.) *ROBINIA PSEUDACACIA*, Linnaeus. Black Locust.

A cultivated specimen, growing in Wabash County, Ill., measured by Dr. Schneck, was 95 feet high and $11\frac{1}{2}$ feet in circumference.

21. (76.) *PRUNUS AMERICANA*, Marshall. Wild Plum.

The tree from which Dr. Schneck's specimens of the wood were taken measured 28 feet high and 27 inches in circumference.

22. (78.) *PRUNUS ANGUSTIFOLIA*, Marshall. Chickasaw Plum.

Dr. Schneck's specimen was 20 feet high and 21 inches in circumference.

23. (81.) *PRUNUS SEROTINA*, Ehrmann. Wild Cherry.

A wild-cherry tree measured by Dr. Schneck was 135 feet high by $10\frac{1}{2}$ feet in circumference.

25. (87.) *PYRUS CORONARIA*, Linnaeus. Crab Apple.

Dr. Schneck's specimen was 28 feet high and 26 inches in circumference.

28. (96.) *CRATÆGUS CRUS-GALLI*, Linnaeus. Cockspur Thorn.

Height, 32 feet; circumference, 20 inches (Schneck).

30. (102.) *CRATÆGUS TOMENTOSA*, Linnaeus. Black Thorn.

Height, 29 feet; circumference, 21 inches (Schneck).

31. (105.) *AMELANCHIER CANADENSIS*, Medicus. June Berry.

Height, 38 feet; circumference, 28 inches (Schneck).

32. (106.) *LIQUIDAMBAR STYRACIFLUA*, Linnaeus. Sweet Gum.

Articles describing this species refer to the corky excrescences to the branchlets as if they were a constant feature. So far is this from being true that it is probably no exaggeration to say that not 5 per cent. of the total number of trees possess them, or at least they are not conspicuously developed in a greater proportion. Indeed, so far as my observation goes (and I have examined many hundred trees), these excrescences are decidedly exceptional.

37. (124.) *VIBURNUM PRUNIFOLIUM*, Linnaeus. Black Haw.

Height, 21 feet; circumference, 11 inches (Schneck).

41. (154.) *FRAXINUS PUBESCENS*, Lamarck. Red Ash.

Height, 138 feet; circumference, 16 feet (Schneck).

44. (157.) *FRAXINUS VIRIDIS*, Michaux, f. Green Ash.

Height, 92 feet; circumference, 5 feet (Schneck).

45. (165.) CATALPA SPECIOSA, Warder. Catalpa.

While near Fairfield, Wayne county, Ill., in May, 1890, I was shown a number of small but flourishing catalpa trees which had sprouted from fence posts. The latter had been split and put into the ground while green and sprouted at the ground, the sprouts forming well-shaped trees 10-15 feet high with stems of proportionate thickness. I supposed they had been planted inside the fence, and would not have suspected their curious origin had not my attention been called to it.

47. (176.) ULMUS ALATA, Michaux. Winged Elm.

Height, 55 feet; circumference, 27 inches (Schneck). In the town of Fairfield, Wayne county, Ill., are some beautiful examples of this handsome tree planted as shade trees along some of the streets. They have assumed a symmetrical spreading form and display conspicuously the curious corky winged appendages to the branches. This species is abundant in bottom lands of Wayne, Richland, Edwards, and adjoining counties in Illinois.

49. (179.) ULMUS PUBESCENS, Walter. Slippery Elm.

A tree measured by Dr. Schneck was 83 feet high and $7\frac{1}{2}$ in circumference.

50. (183.) CELTIS MISSISSIPPIENSIS, Bosc. Mississippi Hackberry.

This is surely a distinct species from *C. occidentalis* in the region under consideration, being always easily distinguished by the conspicuously different foliage, bark, and fruit—the latter not only different in size but in color also. I found it abundant in creek bottoms in the southern portion of Richland county, Ill., where some of the trees were taller than I had seen them elsewhere, apparently 100 feet or more in height.

A specimen measured by Dr. Schneck was 95 feet high and $5\frac{1}{2}$ in circumference.

59. (202.) HICORIA GLABRA (Miller) Britton. Pig-nut; Broom Hickory.

Height, 120 feet; circumference, $8\frac{1}{2}$ feet (Schneck).

60. (203.) HICORIA SULCATA (Willdenow) Britton. Big Shell-bark; Bottoms Shell-bark.

Height, 119 feet; circumference, 8 feet (Schneck).

— (200.) HICORIA AQUATICA, Michaux, f. Water Hickory.

This species was not included in my list, although referred to in the introduction (p. 50) as having been, with *H. myristiceiformis*, mentioned by Prince von Wied, in the list of trees observed by him at New Harmony, Ind.* Under date of December 15, 1883, Dr. Vasey wrote me

* *Reise in das innere Nord-amerika*, 1, p. 209.

that he had lately received specimens of *H. aquatica* from Mr. W. F. Fortune, collected at Equality, Gallatin county, Ill., adding that it was sent to him as *H. Pecan*, "which the foliage much resembles, but the nuts are much flattened, and ridged, and the meat is as bitter as that of *H. minima*."

In view of this virtual confirmation of Prince von Wied's record of *H. aquatica*, *H. myristiceiformis* should be looked for in the lower Wabash bottom-lands.

65. (218.) QUERCUS DIGITATA (Marshall) Sudworth. Spanish Oak.

A specimen of this oak measured by Dr. Schneck was 97 feet high and 6 feet in circumference.

In the White River bottoms there occurs a very strongly marked variety of this species or possibly a tree that is specifically distinct, distinguished from the true *Q. digitata*, which is especially a tree of thin-soiled uplands, by its much larger and taller growth and distinctly light-colored bark. In fact, although it has the bristle-pointed, acute-lobed leaves of the black-oak group, and moreover has the lobes shaped as in *Q. digitata* and the under surface of the leaves densely tomentose as in that species, the bark of the trunk is so light-colored as to cause the tree to be easily mistaken for one of the white oaks, as, for example, *Q. alba* or *Q. Muhlenbergii*, which it further resembles in habit. So very different is it, in these particulars, from *Q. digitata* that I feel quite certain it will prove, on investigation, to be at least subspecifically distinct.

The first specimen met with by me was growing in the White River bottoms, about five miles above the mouth of that stream, on the southern side. It measured 14 feet in circumference, with the trunk free of branches for at least 70 feet, but rather crooked. Other trees quite identical in characters were afterward examined by Dr. Schneck and myself near White River Pond, several miles southwest of the tree above mentioned, but neither of us have seen it elsewhere than in the bottom-lands lying between the extreme lower portions of White and Patoka rivers, where the typical black-barked *Q. digitata* seems not to occur at all, being, as previously stated, apparently confined to thin-soiled or clayey uplands.

66. (222.) QUERCUS IMBRICARIA, Michaux. Laurel Oak; Shingle Oak.

Height, 100 feet; circumference, 8 feet (Schneck).

67. (226.) QUERCUS LYRATA, Walter. Swamp Post Oak; Overcup Oak.

This tree grows in the bottoms of all the streams tributary to the Wabash, at least as far north as Jasper county, Ill., where I found it in the vicinity of Rafe's mill, in July, 1887. In Fox River bottoms,

immediately west of Sugar Creek prairie, Richland county, this oak was the prevailing species over considerable areas of swampy woods.

69. (1.) *QUERCUS MICHAUXI*, Nuttall. Michaux's Oak; Basket Oak.

More recent investigations have shown this tree to be a common one in rich bottom-lands, and certainly specifically distinct (in our district) from *Q. platanoides* (*Q. bicolor*).

70. (228.) *QUERCUS MUHLENBERGII*, Engelmann. Yellow Oak; "Chinquapin."

Height, 155 feet; circumference, 12 feet (Schneck).

71. (229.) *QUERCUS NIGRA*, Linnaeus. Black Jack; Jack Oak.

Height, 65 feet; circumference, $3\frac{1}{2}$ feet (Schneck).

75. (235.) *QUERCUS MINOR* (Marshall) Sargent. Post Oak.

While my estimate of "about 50 to 80 feet high, and 2 to 3 feet in diameter" as the "usual size of the heavier growth" is probably very nearly correct, larger trees occur, one measured by Dr. Schneck being 103 feet high and 10 in circumference.

79. (244.) *OSTRYA VIRGINIANA* (Miller) Willdenow. Hop Hornbeam.

Height 25 feet, girth 26 inches (Schneck).

82. (249.) *BETULA NIGRA*, Linnaeus. Red Birch; River Birch.

Height 105 feet, circumference 10 feet (Schneck).

84. (—.) *SALIX DISCOLOR*, Muhlenberg. Glaucons Willow.

Height 15 feet, circumference 9 inches (Schneck).

- (—.) *SALIX LONGIFOLIA*, Muhlenberg. Long-leaved Willow; Sand-bar Willow.

Height 70 feet, circumference 20 inches (Schneck).

85. (261.) *SALIX NIGRA*, Marshall. Black Willow.

My maximum measurement of $87\frac{1}{2}$ feet is exceeded by one by Dr. Schneck of a tree which was 95 feet high and $7\frac{1}{2}$ feet in circumference.

88. "POPULUS TREMULOIDES. Aspen; Quaking-Asp." (= *P. grandidentata* Michaux. Large-toothed Aspen!).

Dr. Schneck measured a tree of this species which was 97 feet high and $4\frac{3}{4}$ feet in circumference.

P. tremuloides apparently does not occur in our region.

89. (277.) *JUNIPERUS VIRGINIANA*, Linnaeus. Red Cedar.

A specimen growing in Saline County, Ill., measured by Dr. Schneck, was 75 feet high and 5 feet in circumference.

90. (—.) JUNIPERUS COMMUNIS, Linnaeus. Juniper.

A Saline County specimen measured by Dr. Schneck was 25 feet high and 18 inches in circumference.

APPENDIX.

A.—NUMBER OF SPECIES OF NATIVE TREES ASCERTAINED TO OCCUR INDIGENOUSLY IN THE LOWER WABASH VALLEY.

The total number of species given in my catalogue is 94; but from this number the following are to be deducted, as being more properly classed as shrubs than trees:

- | | |
|---|---|
| 1. <i>Rhus glabra</i> . Smooth Sumac. | 3. <i>Fiburnum dentatum</i> . Arrow-wood. |
| 2. <i>Amorpha fruticosa</i> . False Indigo. | 4. <i>Salix lucida</i> . Shining Willow |

The number would thus seem to be reduced to 90; but the additions far outnumber the reductions, the following having been omitted from my list:

- *1. *Ptelea trifoliata*, Linnaeus. Hop Tree.
- *2. *Euonymus atropurpureus*, Jacquin. Burning Bush; Wahoo.
- 3. *Rhamnus Caroliniana*, Walter. Carolina Buckthorn.
- 4. *Esculus octandra*, Marshall. Sweet Buckeye.
- 5. *Rhus Vernix*, Linnaeus. Poison Sumac; Poison Dogwood; Poison Elder.
- *6. *Crataegus spathulata*, Michaux. Small-fruited Haw.
- *7. *Hamamelis Virginica*, Linnaeus. Witch Hazel.
- 8. *Nyssa aquatica*, Marshall. Tupelo.
- 9. *Vaccinium arboreum*, Marshall. Farkle-berry.
- 10. *Bumelia lanuginosa*, Persoon. Gum Elastic; Shittim wood.
- 11. *Bumelia lycioides*, Gærtner. Southern Buckthorn.
- 12. *Mohrodendron tetraptera* (Linnaeus) Britton. Silver-bell Tree; Snow-drop Tree; Calico-wood.
- *13. *Forestiera acuminata*, Poirét. Water Privet.
- 14. *Planera aquatica*, Gmelin. Water Elm.
- 15. *Hicoria aquatica* (Michaux. f.) Britton. Water Hickory.
- 16. *Castanea pumila* (Linnaeus) Miller. Chinquapin.
- *17. *Salix longifolia*, Muhlenberg. Sandbar Willow.

Of the above, those marked with an asterisk have been identified in the immediate vicinity of Mount Carmel, the others being mainly more southern, or occurring only farther down the river. No. 6, *Crataegus spathulata*, is not included in Dr. Schneck's list and has not been met with by him or myself during recent years. Specimens in fruit were found by us, however, near Mauck's Pond, Gibson County, Ind., in September, 1871.* There is some doubt as to No. 16, *Castanea pumila*, which is given on Prof. Sargent's authority; but there is a possibility of an error having been made from the circumstance that the name "chinquapin" is in that region almost universally applied to the fruit of *Quercus Muhlenbergii*.

* See American Naturalist, December, 1872, p. 728.

The actual number of indigenous species of trees in the Lower Wabash Valley (from the mouth of White River southward) would thus appear to be 107, but the total may be still larger through the probable addition of *Ilex opaca*, quoted from southern Indiana, *Crataegus arborescens* (Union and Jackson counties, Ill.), *Hicoria myristicaeformis* (Posey County, Ind., *fide* Prince von Wied), and a few of more general distribution (as *Ulmus racemosa*) which have not yet been reported from the area under consideration.

B.—NUMBER OF SPECIES GROWING IN RESTRICTED AREAS.

Some interesting additions, or additional observations, may be made to the lists given on pages 50 to 53 of my catalogue. Regarding list "(2)", for example (pp. 52, 53), it may be stated that the piece of woods in question consisted wholly of low flat ground, much of it under water in wet weather. Much valuable timber had been culled over the whole area, while from considerable portions nearly all the large growth had been destroyed, two species (the Western Catalpa and Black Walnut, easily identified from the stumps) having in fact been quite exterminated. If these latter had been still growing, the total number of species growing on the 75 acres would apparently be 54, instead of 52, as given in the list. A subsequent examination, however, revealed the presence of two additional species, viz: *Fraxinus quadrangulata* (Blue Ash), and *Hicoria microcarpa* (Little Shellbark), making the actual total 56 species. During a later examination (made in October, 1882), which was restricted to 22 acres of the same piece of woods, no less than 43 species of trees were detected, notwithstanding one piece of 8 acres had been wholly deprived of the undergrowth and most of the large trees, while more or less timber had been cut from the whole tract. This gives about two additional species of trees for each separate acre of the whole area. The species noted are the following:

- | | |
|---|---|
| 1. <i>Liriodendron tulipifera</i> . Common. | 16. <i>Fraxinus Americana</i> . Common. |
| 2. <i>Asimina triloba</i> . Common. | 17. <i>Fraxinus quadrangulata</i> . Common. |
| 3. <i>Acer rubrum</i> . Common. | 18. <i>Sassafras sassafras</i> . Common. |
| 4. <i>Acer saccharum</i> . Common. | 19. <i>Ulmus Americana</i> . Abundant. |
| 5. <i>Rhus copallina</i> . Common, growing
20 to 30 feet high. | 20. <i>Ulmus pubescens</i> . Common. |
| 6. <i>Gleditsia triacanthos</i> . A few small
trees. | 21. <i>Celtis occidentalis</i> . A few small trees. |
| 7. <i>Gymnocladus dioica</i> . A few small
trees. | 22. <i>Morus rubra</i> . Common. |
| 8. <i>Cercis Canadensis</i> . Common. | 23. <i>Platanus occidentalis</i> . Common. |
| 9. <i>Prunus Americana</i> . Common. | 24. <i>Hicoria orata</i> . Abundant. |
| 10. <i>Prunus serotina</i> . Rare. | 25. <i>Hicoria microcarpa</i> . Common. |
| 11. <i>Liquidambar styraciflua</i> . Common. | 26. <i>Hicoria sulcata</i> . Common. |
| 12. <i>Cornus florida</i> . Common. | 27. <i>Hicoria alba</i> . Common. |
| 13. <i>Nyssa sylvatica</i> . Common. | 28. <i>Hicoria glabra</i> . Common. |
| 14. <i>Viburnum prunifolium</i> . Abundant. | 29. <i>Hicoria minima</i> . Common. |
| 15. <i>Diospyros Virginiana</i> . Common. | 30. <i>Quercus alba</i> . Abundant. |
| | 31. <i>Quercus platanioides</i> . Common. |
| | 32. <i>Quercus macrocarpa</i> . Rather common. |
| | 33. <i>Quercus coccinea</i> . Common. |

- | | |
|--|---|
| 34. <i>Quercus velutina</i> . Common. | 41. <i>Populus heterophylla</i> . Abundant along edge of swamp. |
| 35. <i>Quercus rubra</i> . Common. | 42. <i>Populus monilifera</i> . Common along edge of swamp. |
| 36. <i>Quercus palustris</i> . Common. | 43. <i>Populus grandidentata</i> . Sparingly scattered through woods. |
| 37. <i>Quercus imbricaria</i> . Common. | |
| 38. <i>Fagus atropunicea</i> . Common. | |
| 39. <i>Carpinus Virginiana</i> . Common. | |
| 40. <i>Salix nigra</i> . Most abundant tree along edge of swamp. | |

On a tract of 40 acres, partly cleared, 1 mile southeast of Olney, Richland County, Ill., the following species were recognized during an imperfect survey of the woods:

- | | |
|---|---|
| 1. <i>Asimina triloba</i> . Common. | 21. <i>Hicoria orata</i> . Common. |
| 2. <i>Acer saccharinum</i> . Common. | 22. <i>Hicoria minima</i> . Common. |
| 3. <i>Acer rubrum</i> . Rare? | 23. <i>Hicoria glabra</i> . Common. |
| 4. <i>Acer saccharum</i> . Common. | 24. <i>Hicoria alba</i> . Abundant. |
| 5. <i>Gleditsia triacanthos</i> . Common. | 25. <i>Quercus alba</i> . Abundant. |
| 6. <i>Cercis Canadensis</i> . Abundant. | 26. <i>Quercus platanoides</i> . Rather common. |
| 7. <i>Prunus Americana</i> . Common. | 27. <i>Quercus minor</i> . Common on high grounds with thin soil. |
| 8. <i>Prunus serotina</i> . Common. | 28. <i>Quercus macrocarpa</i> . Common. |
| 9. <i>Pyrus coronaria</i> . Common. | 29. <i>Quercus coccinea</i> . Common. |
| 10. <i>Cornus florida</i> . Abundant. | 30. <i>Quercus velutina</i> . Common. |
| 11. <i>Nyssa sylvatica</i> . Common. | 31. <i>Quercus rubra</i> . Common. |
| 12. <i>Diospyros Virginiana</i> . Common. | 32. <i>Quercus palustris</i> . Common. |
| 13. <i>Fraxinus quadrangulata</i> . Common. | 33. <i>Quercus imbricaria</i> . Abundant. |
| 14. <i>Catalpa speciosa</i> . Common. | 34. <i>Betula nigra</i> . Rather common along bank of stream. |
| 15. <i>Sassafras sassafras</i> . Common. | 35. <i>Salix nigra</i> . Rather common in wet places. |
| 16. <i>Ulmus Americana</i> . Common. | 36. <i>Populus monilifera</i> . Rather common along bank of stream. |
| 17. <i>Ulmus pubescens</i> . Common. | |
| 18. <i>Morus rubra</i> . Rather common. | |
| 19. <i>Platanus occidentalis</i> . Common. | |
| 20. <i>Juglans nigra</i> . Common. | |

For the sake of comparison of variety of tree-growth between the foregoing Mississippi Valley localities and localities of equal or greater area east of the Alleghanies, in the same latitude, the following lists are presented:

(1) Near Falls Church, Fairfax County, Va.; locality, a 200-acre farm and vicinity.

- | | |
|---|---|
| 1. <i>Liriodendron tulipifera</i> . Common. | 13. <i>Juglans nigra</i> . Very rare. |
| *2. <i>Plex opaca</i> . Rare. | 14. <i>Hicoria alba</i> . Rather common. |
| 3. <i>Acer rubrum</i> . Common. | 15. <i>Quercus alba</i> . Abundant. |
| *4. <i>Robinia pseudacacia</i> . Abundant, but perhaps spread from cultivation. | 16. <i>Quercus platanoides</i> . Common on low grounds. |
| 5. <i>Prunus serotina</i> . Rather common. | *17. <i>Quercus prinus</i> . Abundant on high grounds. |
| 6. <i>Cornus florida</i> . Abundant. | *18. <i>Quercus Phellos</i> . Common on low grounds. |
| 7. <i>Nyssa sylvatica</i> . Rather common. | 19. <i>Quercus nigra</i> . Common on high grounds. |
| 8. <i>Diospyros Virginiana</i> . Common. | 20. <i>Quercus digitata</i> . Common on high grounds. |
| *9. <i>Chionanthus Virginica</i> . Rather common. | 21. <i>Quercus rubra</i> . Rather common. |
| 10. <i>Fraxinus (Americana?)</i> . Rare. | |
| 11. <i>Sassafras sassafras</i> . Abundant. | |
| 12. <i>Ulmus Americana</i> . Rare. | |

- | | |
|--|--|
| 22. <i>Quercus velutina</i> . Rather common. | *26. <i>Juniperus Virginiana</i> . Abundant. |
| 23. <i>Quercus palustris</i> . Common. | *27. <i>Pinus rigida</i> . Common. |
| *24. <i>Castanea dentata</i> . The most abundant tree on higher grounds. | *28. <i>Pinus Virginiana</i> . Abundant, often covering almost exclusively considerable areas. |
| *25. <i>Castanea pumila</i> . Abundant. | |

The species marked with an asterisk are not included in any of the western lists. Two of them (Nos. 9 and 25) did not assume the size and scarcely the habit of trees, and ought, in fairness, to be omitted.

(2) *Bottoms of the Patuxent River, Maryland, from Laurel 4 miles southward.*

- | | |
|---|---|
| *1. <i>Magnolia glauca</i> . Common locally. | 25. <i>Hicoria glabra</i> . Occasional. |
| 2. <i>Liriodendron tulipifera</i> . Abundant. | 26. <i>Hicoria minima</i> . Occasional. |
| 3. <i>Asimina triloba</i> . Common locally. | 27. <i>Betula nigra</i> . Common. |
| *4. <i>Hex opaca</i> . Common. | 28. <i>Carpinus Caroliniana</i> . Abundant. |
| 5. <i>Acer saccharinum</i> . Rare. | 29. <i>Quercus alba</i> . Common. |
| 6. <i>Acer rubrum</i> . Very abundant. | 30. <i>Quercus minor</i> . Occasional on uplands. |
| *7. <i>Robinia pseudacacia</i> . Common on higher grounds but perhaps escaped from cultivation. | 31. <i>Quercus lyrata</i> . Common locally. |
| 8. <i>Prunus Americana</i> . Rare. | 32. <i>Quercus platanooides</i> . Common. |
| 9. <i>Prunus serotina</i> . Rather rare. | 33. <i>Quercus Michauxi</i> . Common locally. |
| 10. <i>Pyrus coronaria</i> . Rare. | *34. <i>Quercus prinus</i> . Common on uplands. |
| 11. <i>Crataegus Crus-galli</i> . Rare. | 35. <i>Quercus rubra</i> . Common. |
| 12. <i>Amelanchier Canadensis</i> . Rare. | 36. <i>Quercus velutina</i> . Common. |
| 13. <i>Liquidambar styraciflua</i> . Very abundant. | 37. <i>Quercus palustris</i> . Abundant. |
| 14. <i>Cornus florida</i> . Abundant. | 38. <i>Quercus digitata</i> . Common on uplands. |
| 15. <i>Nyssa sylvatica</i> . Common. | 39. <i>Quercus nigra</i> . Common on uplands. |
| 16. <i>Fiburnum prunifolium</i> . Occasional. | 40. <i>Quercus phellos</i> . Abundant. |
| 17. <i>Diospyros Virginiana</i> . Common. | *41. <i>Castanea dentata</i> . Abundant on uplands. |
| 18. <i>Fraxinus Americana</i> . Rare. | 42. <i>Fagus atropunicea</i> . Common locally. |
| 19. <i>Sassafras sassafras</i> . Common. | 43. <i>Salix nigra</i> . |
| 20. <i>Ulmus Americana</i> . Rather rare. | 44. <i>Populus grandidentata</i> . Occasional on uplands. |
| 21. <i>Morus rubra</i> . Rather rare. | *45. <i>Pinus rigida</i> . Common. |
| 22. <i>Platanus occidentalis</i> . Common. | *46. <i>Pinus Virginiana</i> . Abundant. |
| 23. <i>Juglans nigra</i> . Rare. | *47. <i>Juniperus Virginiana</i> . |
| 24. <i>Hicoria alba</i> . Rather common. | |

The above seemingly large list includes every species of tree which I was able to recognize in any portion of the extensive area (at least 5 square miles), which included besides ordinary bottom land, swamps and uplands, with varying conditions of soil. If the count had been restricted to an area of say 100 acres, in any portion of the larger area, the list would have been reduced about one-third. The district having been carefully explored on very numerous occasions (much more thoroughly than I have been able to explore any western tract of equal extent), it is probable that the list is very nearly complete.

C.—CLASSIFIED MEASUREMENTS.

(1) Additions to the "list of trees attaining a height of 100 feet or more."

No.	Species.	Maximum ascertained height.	Girth of tree measured.
35	<i>Quercus Michauxi</i>	119 feet (R. R.)	13 feet.
36	<i>Quercus minor</i>	103 feet (J. S.)	10 feet.
37	<i>Hicoria glabra</i>	115 feet (R. R.); 120 feet (J. S.)	7½ feet (R. R.); 8½ feet (J. S.).
38	<i>Hicoria microcarpa</i>	134 feet (R. R.)	9 feet 10 inches.
39	<i>Hicoria sulcata</i>	119 feet (J. S.)	8 feet.
40	<i>Betula nigra</i>	105 feet (J. S.)	10 feet.
41	<i>Prunus serotina</i>	135 feet (J. S.)	10½ feet.
42	<i>Fraxinus pubescens</i>	138 feet (J. S.)	16 feet.

(2) Increased maximum height as determined by subsequent measurements.

Numera- tion of original list.	Species.	Maximum height as given in original list.	Maximum height by subsequent measure- ments.
2	<i>Tilia Americana</i>	130 feet (R. R.)	135 feet (J. S.).
6	<i>Gymnocladus dioica</i>	109 feet (R. R.)	129 feet (J. S.).
7	<i>Gleditsia triacanthos</i>	137 feet (R. R.)	156 feet (J. S.).
15	<i>Celtis occidentalis</i>	134 feet (R. R.)	136 feet (J. S.).
28	<i>Quercus Muhlenbergii</i>	122½ feet (R. R.)	155 feet (J. S.).
19	<i>Quercus palustris</i>	120 feet (J. S.)	135 feet (J. S.).

(3) Trees which apparently do not reach a maximum height of 100 feet.

No.	Species.	Height.	Girth.	No.	Species.	Height.	Girth.
		<i>Feet.</i>	<i>Inches.</i>			<i>Feet.</i>	<i>Inches.</i>
1	<i>Æsculus glabra</i>	83	35	21	<i>Populus grandidentata</i>	97	57
2	<i>Amelanchier Canadensis</i>	38	28	22	<i>Populus heterophylla</i>	92	90
3	<i>Asimina triloba</i>	48	32				
4	<i>Carpinus Caroliniana</i>	32	54	23	<i>Prunus Americana</i>	28	27
5	<i>Celtis Mississippensis</i>	95	132	24	<i>Prunus angustifolia</i>	20	21
6	<i>Cercis Canadensis</i>	54	66	25	<i>Ptelea trifoliata</i>	15	12
7	<i>Cornus florida</i>	50	50	26	<i>Pyrus coronaria</i>	38	26
8	<i>Cratægus Crus-galli</i>	32	20	27	<i>Quercus digitata</i>	61	72
9	<i>Cratægus mollis</i>	37	27	28	<i>Quercus lyrata</i>	61	54
10	<i>Cratægus tomentosa</i>	16	21	29	<i>Quercus nigra</i>	65	42
11	<i>Euonymus atropurpureus</i>	20	15	30	<i>Ilex copallina</i>	32½	29
12	<i>Foestiera acuminata</i>	22	18	31	<i>Ilex typhina</i>	35	12
13	<i>Fraxinus sambucifolia</i>	83	56	32	<i>Robinia pseudacacia</i> (culti- vated)	95	138
14	<i>Fraxinus viridis</i>	92	60				
15	<i>Gleditsia aquatica</i>	90	57	33	<i>Salix discolor</i>	15	9
16	<i>Ilex decidua</i>	28	37	34	<i>Salix longifolia</i>	70	20
17	<i>Juniperus Virginiana</i>	75	60	35	<i>Salix nigra</i>	95	108
18	<i>Juniperus communis</i>	25	18	36	<i>Sassafras sassafras</i>	95	144
	<i>Morus rubra</i>	68	124	37	<i>Ulmus alata</i>	55	27
19	<i>Negundo Negundo</i>	60	114	38	<i>Ulmus pubescens</i>	83	88
20	<i>Ostrya Virginiana</i>	25	26	39	<i>Viburnum prunifolium</i>	21	11

In the case of a number of the above-named species only one specimen was measured, and it is therefore highly probable that larger individuals occur.

As a result of these additional measurements the last paragraph on page 56 (continued on page 57) of my first paper requires material modification. Compared with the vast number of trees of mature growth which are cut down and destroyed even in a single year, the number of trees from which these measurements were taken is insignificant indeed, and it is quite certain that in not a single instance has

the largest individual of any species of tree growing in the Wabash Valley within the last twenty-five years been measured.

From the meager data that have been gathered, however, we are able to show that the species may be grouped, according to ascertained maximum height, as follows:

(4) *Number of species reaching 100 feet.*

Maximum height attained.	Number of species.	Maximum height attained.	Number of species.
100 feet.....	42	145 feet.....	14
105 feet.....	38	150 feet.....	13
110 feet.....	36	155 feet.....	11
115 feet.....	34	160 feet.....	*8
120 feet.....	27	165 feet.....	†6
125 feet.....	24	170 feet.....	‡4
130 feet.....	21	175 feet.....	§3
135 feet.....	20	180 feet.....	2
140 feet.....	15	190 feet.....	¶1

* *Liriodendron tulipifera*, *Liquidamber styraciflua*, *Platanus occidentalis*, *Hicoria Pecan*, *Quercus macrocarpa*, *Q. velutina*, *Q. coccinea*, and *Populus monilifera*.

† *Liriodendron tulipifera*, *Platanus occidentalis*, *Hicoria Pecan*, *Q. coccinea*, *Q. macrocarpa*, and *Populus monilifera*.

‡ *Liriodendron tulipifera*, *Hicoria Pecan*, *Quercus coccinea*, and *Populus monilifera*.

§ *Liriodendron tulipifera*, *Hicoria Pecan*, and *Quercus coccinea*.

|| *Liriodendron tulipifera* and *Quercus coccinea*.

¶ *Liriodendron tulipifera*.

(5) *List of trees of which no measurements have been taken.*

- | | |
|---|--|
| <p>1. <i>Aralia spinosa</i>. Angelica Tree; Hercules Club; Devil's Walking-stick.</p> <p>2. <i>Hicoria aquatica</i>. Water Hickory.</p> <p>3. <i>Castanea dentata</i>. American Chestnut.</p> <p>4. <i>Castanea pumila</i>. Chinquapin.</p> <p>5. <i>Chamaecyparis thyoides</i>. White Cedar.</p> <p>6. <i>Crataegus coccinea</i>. Scarlet Hawthorn.</p> <p>7. <i>Crataegus cordata</i>. Washington Hawthorn.</p> | <p>8. <i>Crataegus spathulata</i>. Small-fruited Hawthorn.</p> <p>9. <i>Magnolia acuminata</i>. Cucumber Tree.</p> <p>10. <i>Pinus echinata</i>. Yellow Pine.</p> <p>11. <i>Pyrus angustifolia</i>. Narrow-leaved Crab-apple.</p> <p>12. <i>Quercus phellos</i>. Willow Oak.</p> <p>13. <i>Tilia heterophylla</i>. White Basswood.</p> |
|---|--|

In the list of species "usually classed as shrubs," on page 58 of my original paper, those numbered 1, 2, 3, 6, and 7 are to be canceled and transferred to the list of trees. Their measurements are given in table 3 of this paper, on page 419.

In the table which immediately follows the above-mentioned list No. 1 should read *Ilex decidua* instead of "*Ilex verticillata*," and to the species (trees and taller shrubs) whose measurements are there given may be added the following:

(6) *Measurements of larger shrubs.*

No.	Species.	Locality.	Total height.	Girth.
			<i>Fect.</i>	<i>Inches.</i>
5	<i>Cephalanthus occidentalis</i>	Mount Carmel, Ill.....	8	12
6	<i>Cornus paniculata</i>do.....	15	8
7	<i>Forestiera acuminata</i>do.....	22	18
8	<i>Juniperus communis</i>	Saline County, Ill.....	25	18
9	<i>Salix sericea</i>	Mount Carmel, Ill.....	15	11
10	<i>Staphylea trifolia</i>do.....	18	11

The specimens from which the above measurements were taken formed part of the fine collection exhibited by the State of Illinois at the New Orleans Exposition.

It may be of interest in this connection to give the following measurements of the larger growing woody climbers, for which also I am indebted to Dr. Schneck:

(7) *Measurements of larger woody vines.*

No.	Species.	Total length.	Girth.
		<i>Feet.</i>	<i>Inches.</i>
1	<i>Aristolochia tomentosa</i>	83	10
2	<i>Rhus toxicodendron</i>	97	18
3	<i>Tecom. radicans</i>	87	* 19
4	<i>Vitis cordifolia</i>	115	† 26
5	<i>Vitis riparia</i>	60	12
6	<i>Cissus ampelopsis</i>	50	12
7	<i>Bignonia capreolata</i>	‡ (!)	-----

* The average circumference of four stems measured by me was $39\frac{1}{2}$ inches, the largest being 41 inches in girth. One of 40 and another of 35 inches girth climbed the same tree.

† The largest vine of this species measured by me was 36 inches in circumference. Four vines of *V. cestivalis* averaged $30\frac{3}{4}$ inches in girth at 3 feet from the ground, the largest being 38 inches around.

‡ This, though climbing high, is a very slender vine, few stems much exceeding 1 inch in diameter; one which I pulled loose from the trunk of a large tree measured 55 feet to its first ramification.